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### Arrowmont at Loghaven: Craft and Art

Karen Bailey

*University of Tennessee - Knoxville*

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To the Graduate Council:

I am submitting herewith a thesis written by Karen Bailey entitled "Arrowmont at Loghaven: Craft and Art." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Architecture, with a major in .

Dr. William Rudd, Major Professor

We have read this thesis and recommend its acceptance:

Dr. Gregor Kalas, Dr. Mary English, Marcia Goldenstein

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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Carolyn R. Hodges  
Vice Provost and Dean of the Graduate School

ARROWMONT AT LOGHAVEN: CRAFT AND ART

A Thesis

Presented for the

Master of Architecture Degree

The University of Tennessee, Knoxville

Karen Bailey

December 2009



## Abstract

This thesis provides the theoretic framework along with the research into site, program and precedent to support a design proposal for Arrowmont at Loghaven. The goal was to show that spatial organization that both differentiates and unites opposites can be a catalyst for personal and cultural development. The methodology of Christian Norberg-Schulz's structure of space was used to explore the dynamic tension that enlivens architecture at various levels. The thesis explores the hypothesis that relationships that are created by a process of integration, can bring balance, and therefore health, to the individual, the community and the culture. The final design proposal of Arrowmont at Loghaven demonstrates that this method of integrated spatial composition can be the basis of an architecture that supports personal and social development. Extensive site analysis on Loghaven property in Knoxville TN was the basis for an integrated conservation and development plan for the entire 100 acre parcel, as well as yielding recommendations for the acquisition of adjacent properties. Program analysis on the existing Arrowmont School in Gatlingburg TN, as well as three other arts and craft schools served as the basis for the planning of the overall campus site. The work of Frank Lloyd Wright serves as the precedent for a way to balance spatial opposites, illustrating a healthy nature/culture dynamic. The architectural design of the central complex of community buildings was based on Wright's concept of organic architecture, and is illustrated with plans, sections, axonometric renderings, photos of models, and perspectives. The conclusion of this thesis investigation resulted in an integrated plan and design that balances the need to protect the conservation values of the property, while providing a framework for development and architectural intervention. Therefore, the resulting architectural dynamic, at all levels of spatial composition described in the theoretic portions of the thesis, supports healthy development in individuals and the culture of Arrowmont at Loghaven.

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## Introduction

*Man cannot plan the world without designing himself. (1)*

Spatial organization that both differentiates and unites opposites can be a catalyst for personal and cultural development. This thesis will use the methodology of Christian Norberg-Schulz's structure of space to explore the dynamic tension that enlivens architecture at various levels. After a brief overview of the different spatial types, I will focus on the heart of this spatial structure- existential space as the relationship between self and world. Taking things apart *and* putting them back together, either conceptually or literally, is the fundamental activity for artists, architects and craftsmen. The relationships that are created by this process of integration can bring balance, and therefore health, to the individual, the community and the culture. The thesis project of Arrowmont at Loghaven will demonstrate that this method of integrated spatial composition can be the basis of an architecture that supports personal and social development. The work of Frank Lloyd Wright will serve as the precedent for this kind of spatial balance of opposites, illustrating a healthy nature/culture dynamic.

To frame the thesis project of Arrowmont at Loghaven, chapter one will analyze the structure of space, focusing on the central tension or pair of opposites that creates different kinds of space, which are organized in levels to create a topology of differentiated spatial qualities. The levels within the structure of space range from concrete to abstract, and architectural examples will be used to illustrate each level. Norberg-Schulz differentiates the structure of space into six different layers or types. I take this structure as my basis, but modify it and extend it to create an integrated typology of the different kinds of space embodied in an architectural project. Each kind of space is differentiated by the forces at work at that level, most dynamically between two poles or opposites. The forces of differentiation, (which, unchecked, would eventually lead to chaos) are held in dynamic equilibrium by forces of unification, mutual dependency, and order. The "both/and" nature of this dynamic (as contrasted to the "either/or" dualistic method, as well as the "anything goes" anarchy as a non-method) will provide the groundwork for the method used throughout this thesis. Chapter one ends by applying the theory to the patterns of "prospect and refuge" in thirteen of Frank Lloyd Wright's Usonian houses

Chapter two will focus on existential space as it is revealed in the work of Frank Lloyd Wright as the balance between the human being and the environment (Norberg-Schulz), or what I call the self/world dynamic. The analysis of "Wright space" will cover two areas: Wright's writing on organic architecture, and the precedent of Auldbrass Plantation. Norberg Schulz's conceptual framework of existential space will provide a way to understand how one architect achieved a dynamic balance widely recognized as satisfying for human habitation. This will support the thesis that to both differentiate and unite opposites results in a rich design proposal that brings balance, health and development for individuals and the community.

Chapter three will focus on the project itself, both the natural characteristics of the site and the cultural needs of the program. Here the dynamic balance is between conservation and development. Loghaven is a hundred-acre property in south Knoxville, one mile from downtown in the community of Vestal. It was purchased by the Aslan Foundation in order to protect the land from inappropriate development; therefore the site analysis will prioritize conservation potential and recommend means to preserve the natural and cultural resources. At the same time, conservation, especially of historic structures, has a price, and so the development potential for a small portion of the land could serve as a revenue generator to implement the conservation practices that will be proposed. The integrated conservation/development plan will show that Arrowmont at Loghaven would be a good steward of this land, and that a dynamic balance of conservation and development would bring greater health and integration to the land and to the community.

Arrowmont School of Arts and Crafts is a nationally renowned center of contemporary arts and crafts education, located in Gatlinburg, Tennessee. Currently, workshops are offered for one and two weeks in the spring and summer, and one-week and weekends in the fall. Areas of study include: ceramics, fibers, metals/jewelry, painting, drawing, photography, warm glass, woodturning, woodworking, sculpture, and book and paper arts. The public is welcome year-round to visit the school's five galleries, resource center and book and supply store. Artist residencies, assistantships, work-study, scholarships community outreach, conferences and music programs contribute to Arrowmont's mission of "enriching lives through art." Chapter three starts from the existing program of Arrowmont at Gatlinburg, but goes on to make proposals about the potential new functions Arrowmont at Loghaven could take on, given the circumstances of a location so close to downtown Knoxville and the University of Tennessee.

Thus, chapter three aims to explore the dynamic between nature and human purpose, with the goal of balancing environmental protection with human intervention in the landscape. The site analysis will use diagrams and maps that capture the natural resources and the existing human interventions at the site. As a cultural institution spanning almost 100 years, Arrowmont would serve the Knoxville community by being a catalyst for cultural development through education of the arts and crafts. The conclusion of this chapter will be a composite analysis of the natural and cultural assets and limitations of the site, with a proposal for an integrated conservation/development plan. This plan will serve as the "canvas" to design Arrowmont at Loghaven.

Chapter four will serve as the conclusion of the thesis to show how the application of the theoretic ideas has been applied to a design for Arrowmont at Loghaven. This chapter will explore the ways that dynamic balance can be experienced when we interact with architecture, and what activity this engagement leads to that can act as a catalyst for individual and cultural development. This articulated typology of space brings all of the ways we can interact with architecture into one unified conceptual framework. Thus, moving from the most abstract to the most concrete, applying the spatial typologies to the design of Arrowmont at Loghaven, I will look at architecture as geometry, language, art, dwelling, design, building and program. The theoretic framework developed in chapter one will be

the basis to see how these potentially differentiated ways of experiencing architecture can be unified and connected in interesting ways. Further, each way of being in relationship to architecture leads to a kind of activity that will have concrete application to the thesis design in terms of the structure, meaning, creativity, character, form, craft and function of Arrowmont at Loghaven. The thesis project will be documented with plans, sections, axonometric renderings, photos of models and perspective illustrations.

## Chapter One- Composing Space by Balancing Opposites

### Section 1: The Middle Path

*Nature quite in general and man in particular expend much effort on the interfaces that connect and separate creatures in their environment and relate them to it. (2)*

In analyzing Norberg-Schulz's theory of existential space, I am applying the method used throughout this thesis to both differentiate and unify at the same time. This method focuses on what Arnheim, in the quote above, identifies as the "interfaces that connect and separate," or what he calls, "indispensable antimony." Arnheim uses a negative example, M.C. Escher's drawings that deploy reversible patterns, for these "exhibit an unstable equilibrium and oscillate erratically between the competing versions" (3). Equilibrium is demonstrated clearly in the relationship between vertical and horizontal, as two opposites that operate in contrasting directions. There is no contradiction and a high degree of order in a relationship of dynamic equilibrium. I am not interested in the type of contradiction that Venturi explored in architecture, for example, which attempts to learn lessons from non-ordered systems. Instead, dynamic equilibrium, as explored in this thesis, is viewed as a highly ordered and complex system of forces held in tension. There can be more or less complexity, but not incompatibility, which would create disorder. A strong basic structure can tolerate tensions without being endangered by disequilibrium. Thus, equilibrium needs separation and connection, differentiation and unification.

To appreciate the depth and potential power of this concept we could look to the east, which, in many cultures, has placed this relational nature of opposites as the basis for the dominant world view. Carl Jung once lamented, "Our Western mind, lacking all culture in this respect, has never yet devised a concept, not even a name, for the union of opposites through the middle path, that most fundamental item of inward experience which could respectably be set against the Chinese concept of Tao." (4) This concept has been described as Tai Chi in Taoist philosophy, and has been developed as a practice of harmonious movement. In the Taoist tradition, for example, absolute nothingness, the source and ground of existence, was called Tao. It was thought that existence manifests itself as an infinite number of complementary opposites that are both differentiated (the black and white partial spirals of the classic ying-yang symbol), and also united (not only is there a dot of its opposite color at the heart of each spiral, they spiral around each other to complete the whole). This whole is the spiral motion of complementary opposites which is the Tai Chi, comprising all existence. Practicing Tai Chi has brought physical, emotional, and social health to eastern cultures and people, and has been imported to the west. This thesis applies the idea of dynamic balance to a theory of space and the practice of architecture analogous to the theory and practice of Tai Chi in order to bring health and development to the individual and the culture.

Jean Piaget (1896-1980) describes the process of growth and development in terms of increasingly complex schema, understood as typical reactions to a situation (5). The word “schema” comes from the Greek word "σχῆμα" (skhēma), which means *shape*, or more generally, *plan*. According to Piaget’s theory, schemata are formed during mental development through the interaction between the individual and the environment and by this process a person’s actions or ‘operations’ are grouped into coherent wholes. The development process is a combination of ‘assimilation’ and ‘accommodation,’ ‘assimilation’ referring to the action of the organism on surrounding objects, and ‘accommodation’ to the opposite state. Piaget defines ‘adaption’ as ‘equilibrium between assimilation and accommodation.’ Humans make the environment meaningful by assimilating it to purposes, and at the same time accommodating to the conditions it offers. Thus, we could say that the method of balancing opposites across the range of spatial typologies represents a mental model of “spatial adaptation,” using both assimilation and accommodation to create a state of equilibrium.

An architectural example of this *both/and* approach can be seen in Baroque architecture. Norberg-Schulz argues that it provides a convincing synthesis of the two fundamental aspects of architectural composition: separation and unification. “Articulation, in fact, always consists in the interaction of these two aspects. Spaces, masses and wall elements are *separated* to express the fact that any building consists of different parts, functionally or symbolically determined. As these parts, however, are parts of an organism, they must be *unified* by continuity, repetition (similarity), interdependence or interpenetration.” (6) Thus, we could say that one result of differentiation and unification of spatial schema is “articulated space.”

This fundamental relationship between parts and wholes is what artists, architects and crafts people are most familiar with, and so I will be using the term “composed space” to name the dynamic interplay of opposites that stands behind the thinking processes. I am weaving together craft and art in this dynamic balance, where craft is the more concrete activity of *doing* and art is the more ideal activity of *thinking*, but which together form a continuum and are not mutually exclusive categories; each is needed to complete the other. This is relevant to the project of Arrowmont at Loghaven, because the intention is to not only juxtapose what is considered craft, such as weaving and woodworking, with art, such as drawing and painting, but to explore the relationship between craft and art.

## **Section 2: Mapping the Structure of Space**

*If the building is to be architecture, i.e. a product of the form-creating mind, it must meet the general standards of the mind, and therefore it must be conceived as a whole, regardless of how useful this overall unity may be to the inhabitants or even how accessible or knowable it is to them. Such unity requires integration along all relevant dimensions. (7)*

The relevant dimensions that Arnheim mentions in the above quote are described by Christian Norberg-Schulz as six different levels or qualitatively differentiated kinds of space: pragmatic

(integrating man with his environment), perceptual (space of immediate orientation), existential (forming man's stable image of his environment), artistic (systematizes the possible properties of expressive spaces), cognitive (about the physical world), and abstract (pure logical relations). He goes on to modify artistic space to focus only on architectural space; i.e. aesthetic space as the theory of architectural space(8). He bases his work on Piaget, who thought it was necessary for the organism to acquire schemata that could directly mediate a three-dimensional world. Piaget shows that our 'space consciousness' is based upon operational schemata, that is, experiences with things. The space schemata may be of very different kinds, and the individual normally possesses more than one schema, to allow one a satisfactory perception of diverse situations. The schemata are culturally determined and comprise qualitative properties resulting from the need for affective orientation to the environment.

Norberg-Schulz thinks that the structure of spatial typologies is controlled from the top, that is, from the more abstract and general aspects, in that the rational and logical orientations organize and sometimes override lower categories. The vital energy, i.e. motivating and affective impulses, rise up from the bottom, and these are the more concrete and specific ways of orienting ourselves in space. We could also use a metaphor to say that order is greatest at the top and "trickles down," while "meeting" is greatest at the bottom and works its way upward through a spatial capillary action. Therefore, by consciously working with these levels of spatial schemata in architecture, and the forces at work at each level, we can begin to qualitatively influence the direction of personal and cultural development.

My interpretation of Norberg-Schulz's typology of the different kinds of space is in outline form (figure 1). I disagree with Norberg-Schulz's understanding of this spatial structure in one important way. Norberg-Schulz refers to architectural space as a concretization of existential space, but then inconsistently places architectural space above existential space as a kind of artistic space. Therefore, to consistently move from the more concrete category of pragmatic space, "up" towards the more abstract categories, I have broken out architectural space as a category separate from artistic space and placed it below existential space. Therefore, my interpretation of Norberg-Schulz's outline of the different kinds of space has seven categories rather than six, which places his central interest, existential space, in the center of the spatial typologies. I will focus on this category in my analysis, while also touching on the whole spectrum to give the appropriate context to understand the significance of Frank Lloyd Wright's notion of the integrated spatial values of plasticity and continuity. This organization of spatial typologies maps a way to unify our spatial concepts.

### **Section 3: Both/And**

*The various functions of a building, like the parts of any other whole, are related to one another by a more or less intricate pattern of connections and separations, to which the architect may do justice by providing different ratios of unity and diversity at different levels of the design. (9)*



Each type of space identifies the central tension or pair of opposites that creates the space. One implication for architecture is that the role of the architect is to mediate these various dynamics, creating variety, complexity and richness in a project which serves the client and the environment.

## **I. Pragmatic Space**

Starting with the most concrete level, pragmatic space, the fundamental dynamic is between public and private spaces. Two examples from Alvaro Aalto's work will illustrate one way to balance the public and private functions of a project. Aalto's residential designs for a private home (figures 2 and 3), and an apartment building (figures 4 and 5), there are intermediate zones that are neither completely private nor completely public; either semi-private or semi-public space. The transition from one type of space to another is handled with great care, as in the case of the front door to the house along stepping stones, where the conscious placing of each foot step brings a visitor from the completely public space of the sidewalk, progressively closer to the threshold and entrance, first to a transitional foyer, then to the semi-public space of the living room. Further, studio, private bedrooms, and study have doors differentiating the private spaces, some of which are sliding partitions that open the entire wall to the living area, but maintain a threshold and differentiation by being two steps up. There is also a door to the outside patio which serves as a semi-private space, screened from the neighbors with a wall. In the case of Aalto's apartment design, each unit is given a balcony overlooking a very public square, but which is screened from its neighbors by the fan like shape and angles created by the walls. The shared circulation space becomes the "commons" or public space of the residents who live on each floor, connecting each unique and highly differentiated apartment.

In both of these examples, there are certain assumptions about the proper role of public and private spaces and a refined way of bringing them together to create intermediate spaces that both separate and differentiate, while at the same time uniting and bringing the individual into the community. For Arrowmont, a shared understanding of these fundamental roles for public and private spaces will need to be articulated so that a pragmatic composition can be achieved. In chapters three and four I will apply this concept of pragmatic space to the different aspects of the program- living, working, creating and socializing, which will lead to various kinds of public, private, and intermediate spaces.

## **II. Perceptual Space**

*Similar function should be reflected in similar shape; different functions in different shapes. Visual accents should occur in places of importance. The image of the building should lead, not mislead, in its overall arrangement as well as in detail. (10)*

In a well-designed building, there is a structural correspondence between visual properties and functional characteristics. Arnheim believes that buildings are expected to show how they can be used, and that combining different functions in a common design is a special art. It requires that the various

functions be kept visually present, in spite of their fusion. Thus, there is a close relationship between these first two levels of spatial organization.

Perceptual space is created from the fundamental distinction between parts and wholes. The edges or boundaries become the expression of the forces that exist within each part and which act on other parts and on the whole. The whole is the *gestalt* of the perceptual space. Arnheim claims that balancing always applies to forces. Thus, describing patterns in terms of their dynamics does justice to their expressive richness. Shapes are the results of activity, and there is always a corresponding countertendency or “counteractivity,” such that shape exists and can only exist by virtue of the equilibrium between the two. For example, round shapes like bubbles result from the balance of pressure from the inside and outside of the surface area. In the case of natural shapes, biological and physical forces work in complex interactions to form plants and animals. Arnheim’s principal concern is to show that visual expression is an indispensable and inescapable attribute of all architectural shapes.

Composing perceptual space, then, is a matter of differentiating the parts and at the same time uniting them with the whole. Since all dynamics can be perceived in both directions, a “field” of forces is created that weaves the parts together into a unified whole. This is a complex activity yet we take it for granted, since it is mostly automatic. The “composed” nature of our perceptual field is unconscious, unless intentionally cultivated by activities such as photography, painting or drawing from nature, and all crafts that unite the eye and the hand. Photography and perspective drawings are modes of representation that will be used to illustrate perceptual space.

Guell Park (figures 6 and 7) by Antoni Gaudi and Villa Mairea by Alvaro Aalto (figures 8 and 9) show a high level of differentiation and unification between the parts and the wholes. In going back and forth from a whole to a part, we make judgments about balance and interrelationships. These intuitive judgments are based on objective perceptual features, and are derived from a weighing of the various visual forces and their interactions. Thus, as we intuitively compose the perceptual whole, commensurate with picking out elements: edges, areas of color, shapes, lines of force, the ratio between rising and reposing, lightness and weight, independence and dependence; at the same time these various elements seem tied together by their reciprocal influence. The result is an intimate cohesion of the total design. Thus, the parts and wholes of Arrowmont at Loghaven will be artistically designed and, hopefully, eventually crafted into the building.

### **III. Architectural Space**

*A building is conceived, for the most part, as a stable refuge amidst the hubbub of human activity. Therefore, its meaning must be seen in the context of that setting...being a shelter, its expression can be limited to ways of being a shelter and container, a gathering place for particular human activities. (11)*

The primary dynamic tension that creates architectural space is between the inside and the outside. No spatial problem is more characteristic of the architect’s work than to relate synoptically the outside and inside as elements of the same conception. Robert Venturi said, “Designing from the outside in, as well as from the inside out, creates necessary tensions, which help make architecture.

Since the inside is different from the outside, the wall- the point of change- becomes an architectural event.” (12)

The architectural field, like the perceptual field just described, also consists of forces which can be balanced in a state of dynamic equilibrium. The forces from inside push out, the forces from outside push in, and what is created is the wall, the roof and the floor. This “shell” is one important focus of architectural design; the elevation (the outside) and the section (the inside) represent the composed architectural space. The outside proper is the space of landscape architecture. The inside proper is the space of interior design. Architectural space consists of those elements of wall, roof and floor which become the boundary and mediator between inside and outside

The dynamic tension created is illustrated in the examples by Erik Asmussen by reversing the figure ground relationship between the elevation and the section of the composed architectural space (figures 10-14). When the inside and outside fuse into one integrated vision, we have a work that carries meaning and can be understood as a whole. Openings mediate between the worlds separated by architectural barriers, and therefore windows and doors become important transitional spaces. How these elements are articulated within the architectural space of façade and section will be a major focus of the design of Arrowmont at Loghaven. One implication of this is that the landscape design and the interior design will need to be integrated with the proposed structures to reveal the compositional forces and dynamic balance of the inside, the outside and the interstitial.

Much work could be done on the metaphoric nature of the dynamic of inside and outside as well. At this level of spatial thinking, architectural solidity, starts to gesture toward the next level, this is the inner world of experience as it relates to one’s experience of the environment. Norberg-Schulz’s says that architectural space can be defined as a concretization of man’s existential space, where “space is really understood as a dimension of human existence, rather than as a dimension of thought or perception.” (13)

#### **IV. Existential Space**

*The structure of existential space expresses the incessant tensions inherent in life. (14)*

Architectural history describes how architects found the ‘spatial foothold’ under different conditions. One of the functions of architecture is to improve our understanding of the relationship between the individual and the environment. A building can become an expressive presence active in the environment. “Character in relation to space means place in the sense of an individual ‘here,’ which helps man to gain existential foothold.” (15) Although a building can be complete in itself as a formal design, it is an implement of physical utility and therefore reveals its full meaning only through human purpose. However, existential space cannot be understood in terms of man’s needs alone, but only as a result of his interaction with an environment.

Thus, the fundamental dynamic tension that creates existential space is between the individual and the environment, or what I will call the self/world synoptic whole. The examples illustrate the use

of models as a good mode of representation to express this dynamic (figures 15-19). The model reveals the personal connections one can have with the building, creating a miniature “presence” that intimates the character and presence that will occur in the full sized building. Therefore, a photo of the building during or after construction is juxtaposed with photos of the model. Here we can see the model as image of self, and the built work as image of self-in-the-world. Models are the most toy-like media the architect has to represent the character of a project, and the mental models the architect uses are a way to “play” with the one’s own identity as well as the character of the project that unfolds in “the mind’s eye,” i.e. the imagination. Thus, we are all in the process of creating the self/world relationship in our imagination; the architect can make this relationship concrete. “The levels of architectural space form a structured totality which corresponds to the structure of existential space. As man’s identity is established in relation to the totality of existential space, all the levels of architectural space must have their defined identity. Without it, man’s image of his environment will be confused and his own personal identity threatened.” (16)

Norberg-Schulz organizes existential space such that the elementary schemata establish centers or places (proximity), directions or paths (continuity), and areas or domains (enclosures). Thus, places, paths and domains are the basic schemata of orientation, the constituent elements of existential space. Places are connected to man’s personal world as its center, which is expressed in the home. “From the very beginning, the center represents to man what is known in contrast to the unknown and somewhat frightening world around.” (17) The limited size of known places naturally goes together with a centralized form. A centralized form primarily means ‘concentration.’ A place, therefore, is basically round, and the found form of a place consists of two elements, a center and a surrounding ring. The center, then, is analogous to the self; the surrounding ring is the world. Holding the dynamic tension between self and world will be to compose the existential space with great attention to identifying and articulating centers (places), edges (domains) and how they relate (paths).

## **V. Artistic Space**

*Images of divine powers are made of durable materials, and the heavy stone walls of temples, fortresses, and palaces have always served as a suitable metaphor for temporal and spiritual power. (18)*

The qualitative characteristic of artist space concerns the fact that although art exists as real (materials, colors, forms, sounds, words), art is always related to something ideal, (beauty, harmony, expression, concepts, ideals, visions, dreams, intentions). Norberg-Schulz says very little about artistic space other than what I have already included as architectural space, which he saw as a subset of artistic space, but which I identified as its own special kind of space. Artistic, or “aesthetic space,” is surely more general and not primarily architectural. I am proposing that the dynamic tension that forms artistic space is a relationship between the ideal and the real. There is a perceptual aspect and a metaphoric or symbolic aspect, and the relation between them forms the expressive quality of the work. “The artist, the architect, is concerned first of all with the broad metaphoric quality of perceptual expression.” (19)

The most influential theory that accounts for expression is the doctrine of empathy. “Viewing a

work of architecture lets the observer sense within himself perceptual forces of load and resistance, of pull and push, and so forth. This immediate resonance of the forces observed in visual objects accompanies all perception, but it is particularly decisive for aesthetic experience, which is based on expression.” (20) Thus, in participating empathetically with a work of art or architecture, one attempts to perceive the dynamic tension between what is perceptually present and what seems to be the ideal content of the work. Arnheim argues persuasively that this relationship between perceptual reality and ideal expression is shared by most people because the nature of perception has evolved to assist humanity in understanding and participating in the laws and ideas that are being expressed. But in art, sensory reality is transformed. The artist may take hold of the starting point in reality and develop something to its most perfect form. The inner aspect is brought to expression in the outer through human insight and creativity. The basis is not what is, but what might be; not just the real, but the possible. Artists pick up where nature left off, in a sense competing with reality to create an expression that is so alive and full in its presence that others perceive its validity and value.

The example of Fallingwater by Frank Lloyd Wright demonstrates the real and the ideal in equilibrium, which is widely regarded as a masterpiece of ideal living in rock, water, and concrete (figures 20 and 21). Looking at the formal elements, the space is composed such that there is no single real perspective that the whole can be taken in from one place. Yet there is a clear vision of the ideal spaces stacked one upon another in a cascading fashion that mirrors the cascading waterfalls. The real elements of water and rock are everywhere apparent and immediate. The important point is that there is a relationship between the ideal space and the real space that creates the aesthetic whole. Looking at the ideal living that is also expressed in this building, much could be noticed about the familial and social ideals that Wright embedded in his projects, especially his domestic commissions. I will use only one example and that is the ubiquitous hearth, which represents the ideal heart of the home, here literally wrapped around the foundation boulders of the house. It is unfortunate that the only people that ever actually lived there, the Kaufmann’s, did not find family security to mirror this masterpiece of artistic balance between the ideal and the real.

## **VI. Cognitive Space**

*Taken together the symbol systems constitute the common order we call culture. Participation in a culture means that one knows how to use its symbols through perception (experience) and representation (expression). (21)*

Conceptual space is about the world but not completely of the world, consisting of the composition of percepts and concepts. This is the space of language and knowledge, where the mediating element is consciousness. Language about architecture could be about the history, the theory or the criticism of architecture. There is also work done in architectural design that looks at architecture itself as if it were a language. Further, conceptual space improves the way the average person talks and thinks about architecture. Much work has been done in these various ways to express cognitive space architecturally, as well as on architecture as it exists in the cognitive domains of the discipline.

The dynamic tension between perceptual experience and conceptual thinking about architecture can be brought together into a clear relationship. Knowing the history and intentions behind a work of architecture can reveal perceptual aspects to the viewer that might otherwise remain hidden to those ignorant of such historic and theoretic frameworks. One fairly obvious implication is that one must perceptually experience architecture by being there. We do not take in perceptions only through our eyes, although that is a primary way of experiencing architecture. However, this does not mean that a photograph is as good as being there. Approaching a building with all senses alert, going into a building, walking through a building- this is the only way to experience the literal spaces of the pragmatic, perceptual, and architectural types. Existential space, arising from a real relationship between an individual and the world, requires bodily experience of places, paths, and domains, those fundamental elements of Norberg-Shulz's existential space. Only by being an individual in a real place can the world be around one; the relationship is concrete and perceptual. Therefore, the conceptual work of architectural theory and criticism has half its job done when all of our senses are fully functional and receptive to the work of architecture that stands before the observer. Secondly, to compose cognitive space by relating the perceptions one has with the thoughts one has, one must flesh out the concepts by reading, study, reflection and thinking about architecture. There is no single architectural language, but many different kinds, some closed and hermetic, others open and collective, and many in-between. Thus, there should always be a relationship between conceptual frameworks and perceptual reality. "The most important cognitive virtue of a civilization probably consists in the working interrelation between practical physical activity and so-called abstract thought. The mental life of a civilization is broken asunder when, on the one hand, the meaning of walking, eating, cleaning, sleeping, exploring, and making things is reduced to the material and physical gain accruing from these activities, and when, on the other hand, the principles by which we understand the nature of things and govern our conduct are reduced to intellectually defined concepts, which no longer benefit from their perceptual sources." (22)

To illustrate a balanced relationship between concept and percept in architecture, two buildings by Maya Lin at the Children's Defense Fund, located at the Alex Haley Farm in Clinton, Tennessee, will be mentioned. The Langston Hughes Library TN, dedicated in 1999, is in the form of a cantilever barn, a vernacular form that fits the Haley Farm site as a symbolic image (figure 22). Storing books and storing hay may seem unrelated concepts, but in both cases what is being stored is vital to the workings of the whole; the Children's Defense Fund using knowledge to influence policy decisions for the well-being of children, and farms using hay to feed the animals for the well-being of the family. The Riggia-Lynch Interfaith Chapel, dedicated in 2004, is in the form of an ark, which represents the shelter and protection of all those working for the benefit of children (figure 23). In these two examples, there is a clear concept that goes with each of the perceptual forms of the two building that convey meaning that everyone can appreciate and "get," creating expressive meaning in the local and mythological vernaculars respectively.

## VII. Abstract Space

*Architecture in particular has almost always aimed at geometrical perfection and symmetry...Architecture has ways of expressing tension, interference, distortion, and similar modifications of undisturbed harmony. (23)*

Abstract space is created through the dynamic tension between movement and stillness, or one could say between temporal and spatial ideas. The concept of a four dimensional space-time continuum reflects this dynamic relationship, but it is very difficult for most people to grasp. We still operate in a day to day way by moving in abstract Euclidian space. For example, in Renaissance architecture the idea of integration by means of repeated, simple geometrical units, resulted in principle in the establishment of a continuous field of Euclidean character. “For the men of the Renaissance,’ writes Wittkower, ‘this architecture with its strict geometry, the equipoise of its harmonic order, its formal serenity, and above all, with the sphere of the dome, echoed and at the same time revealed the perfection, omnipotence, truth and goodness of God.’” (24)

Baroque architecture developed these geometric ideas, but used geometry and process to form a dynamic tension or “field” in the work. For example, Borromini created synthetic totalities such that no individual units were singled out (figure 24). The curved walls are determined by geometric centers, but they create interpenetrating centralized fields. Somewhat later, Guarini repeated the interrelated centers and interfering zones systematically to form extended patterns which interpret the continuous space of Renaissance architecture in dynamic terms (figure 25). Thus, distinct elements give way to systematic change and complex integration and continuity. In another example, Paolo Portoghesi used perceptual fields in the design for Cas Andreis (figures 26 and 27). The notion of perceptual and social fields is adopted from physics, such that Portoghesi conceived of buildings as islands in space, and focused upon those shapes that indicate the dynamics of fields most directly, namely of patterns of concentric circles, as they appear on the surface of a pond when a stone is dropped into the water. “Portoghesi speaks of the ‘cognitive fascination derived from the transparency of the structures, which display themselves to our eyes in the fullness of their architectural potential.’” (25)

Geometry and the balance of movement and stillness is central to the the work of Frank Lloyd Wright, where geometry is used to create unity. For Wright, order lay at the core of his idea of the world. As we shall see in the Usonian houses, hexagons and triangles were used to form the geometric order as well as orthogonal grids. I will show in the precedent analysis in the following chapter that geometry can balance the movement through the building with the stillness of the building, to yield a structure that reflects human purpose and use.

### Section 4: Prospect and Refuge in Frank Lloyd Wright’s Usonian Houses

He (Wright) was an unparalleled composer of spaces, and in a series of designs from 1900 to 1902, he discovered such a satisfying way of composing them that it became thereafter

his canonical way. The pattern became for him a repetitive device whose appeal, he seems correctly to have sensed, would be both widespread and powerful. (26)

The appeal of Usonian houses can be understood by the balance of opposites that Wright used in composing his spaces. In the houses of this period, refuge and prospect were secured without loss of communality, in that they offered the person a choice of both a refuge from and a participation in the community's space, i.e. the city or suburban street. By the time of the Usonian houses, the effective balance between prospect and refuge becomes the dominate characteristic of these houses.

The Usonian House comes from Frank Lloyd Wright's later architectural career and includes many post-Depression houses. "Usonia" was Wright's name for the reformed American society that he spent the last 25 years of his career trying to bring about. Wright believed that a culture and an individual should proceed integrally from its roots, and the expression he used was "out of the ground and into the light," beautifully expressing the dynamic of opposites that is at the heart of this thesis.

After a brief overview of the concept and history of the Usonian house, I will be diagramming the dynamic between "prospect and refuge" that Grant Hildebrand first elucidated in Wright Space-Pattern and Meaning in Frank Lloyd Wright's Houses. This structure of space is one example of what I described in chapter one as a combination of balanced pragmatic and existential spaces. "Prospect and refuge" is the experience of balanced relationship between the private and public functions, as well as the sense balance between self and world one has when dwelling. Thus, Wright's spatial compositions created dynamic, balanced and healthy functional dwellings.

In the Usonian house, Wright developed a "grammar" that was then applied to different conditions and used different materials. Part of what Wright meant by "organic architecture" was building with nature rather than against nature. This meant that the houses were designed to different climates but in all cases were meant to produce conditions of comfort with natural means. Further, an organic whole was not thought of as a single state but as a dynamic process.

Three of the main features of the Usonian house were board and batten walls, a planning grid, and under-floor heating. The planning grid appeared in the concrete floor itself, so that the grid helped to locate walls and glazing units easily. The submerged gravity heating system has been improved since Wright's Usonian houses, and it can be adapted for standard heating systems or used in combination with geo-thermal heating and cooling.

Another concept Wright used that can be adapted for modern methods of production is the prefabrication concept. Designs were varied according to each client's needs, according to the site, and the local building materials available. Further, each house was designed to be added on to over time, allowing it to grow with the family and the availability of funds. Of the twenty-six Usonian "kits" that were built by 1948, most still housed their original owners by 1975. Wright's concept provided a variable, low-cost dwelling with centralized services that could be partially or completely built by the owner and spread out over time. Modular and component assemblies have been attempted in other



cases, but Wright applied his full artistic skill in making them interesting, functional and comfortable. The greatest difficulty for potential clients to build the Usonian houses was the financing. However, Usonian houses ended up in fourteen states, and were promoted in magazines across the country, eventually influencing the acceptance of prefabricated houses.

One of the big advantages of the Usonian house was its low cost of construction. The clarity of the construction process contributed to the fact that, for the most part, all the Usonian houses were economical. Another advantage was the delight the owners had in their houses, as the materials and spatial characteristics of the Usonian houses gave them a sense of variety and security. Characteristics the houses shared included a strong identity from the street, clear horizontals, warm materials on the interior, human scale, intimate bedrooms, large living areas with higher than normal (for Wright) ceilings, a sweep of bookcases and a flood of light. Built in furniture was often used to differentiate the space for separate activities. Space was not static but flowed through the house with complex and ambiguous boundaries such that areas overlapped; for example, an area for dining that served also as space for the living room or kitchen. All this gave even the small houses a sense of spaciousness and informality.

The area that was least successful for the Usonian house was the electrical system. The concrete floor and unadorned brickwork caused problems with running circuits. Once completed, the solutions that were found were adequate, but the construction was difficult and Wright was never satisfied with this aspect. One change could be that some building elements be designed as hollow to run electrical conduit and plumbing, but these would need to be fairly small size compared to the space saved from duct work because of the under floor heating. Another area that could be improved upon was the kitchen's small size which generally lacked views to the outside, and in a family house, the children generally took over the living room. Typically Usonian clients were independent-minded, journalists, academics and small businessmen. These were almost always situated in non-urban sites with some acreage and landscape to work with. Since most of these houses were built just after the depression, there was a fairly cheap supply of highly skilled craftsmen.

Hildebrand bases his notion of prospect and refuge on the earlier work of English geographer Jay Appleton's The Experience of Landscape. By prospect Appleton meant a place with unimpeded opportunity to see, and refuge was a place of concealment. This mutual complementary relationship could be described as "seeing without being seen," and the pleasure humans derive is apparently founded in evolutionary biology, in that such places gave our ancestors the best chance for survival. Another way to describe the relationship is between the cave and the meadow, and humans need both experiences united in one place to feel safe. In Wright's way of organizing space, then, we sense that the building draws us in; that, having been drawn in, we perceive that there are warmly containing spaces juxtaposed with a sense of release; that we have options of whether to be seen or not; in short, that there is a balance of prospect and refuge. It is this character that is so right about Wright's space, and which has given his buildings a strong and enduring value. "Rich ladings of prospect and refuge, between which one can choose and adjust at will, make his houses continually magical spaces." (27)

There are thirteen patterns that Hildebrand identifies as being pervasive in Wright's designs for Usonian houses (figure 28). In my analysis, I found that claim to be confirmed with an average of ten patterns of the thirteen used in the thirteen houses I researched. Looking at the house from the outside, there are two common patterns that Wright uses to identify that there will be a refuge, once the house is entered, from which to survey the surrounding neighborhood or street as prospect. These are the features that draw us in, which are indicated on the exterior with conspicuous balconies and terraces (pattern 1), and broad horizontal groupings of window bands (pattern 2). From the outside we also get a visual clue that there will be a central area of refuge within the inside from which prospect to other interior spaces will be available, and that pattern is the evident central chimney (pattern 3). A final clue which can be observed from the outside that the refuge opening out to prospect of the neighborhood is the pattern of deep overhanging eaves (pattern 4), which indicate a sheltered place just outside where one can see but not be seen.

Once inside, the pattern of elevating major spaces above the terrain as a kind of overlook (pattern 5) gives a strong sense of prospect from the interior looking out. The relationship of inside to outside (as analogous to refuge and prospect) is strengthened with glass and glazed doors on walls distant from the fire (pattern 6), which lead to generous elevated terraces beyond (pattern 7). The fire as the central organizing refuge on the interior is supported by four separate patterns, which Wright used in various combinations. The fireplace was almost always at the heart of the house, set in along an internal edge of a room (pattern 8). The area around the fireplace often had a low ceiling and its edge was flanked by built in seating and cabinetwork (pattern 9). Further, the ceiling in front of the fireplace would sweep upwards into the roof, echoing its form and offering prospect into the open space plan of living and dining zones (pattern 10). Finally, the distant edge of the ceiling would return to a low elevation, creating a boundary of the interior prospect before it opened out to the exterior prospect (pattern 11). A final pattern that created the refuge prospect experience on the interior occurred when interior views to contiguous spaces were seen beyond architectural screening devices (pattern 12). Integrating all these spaces and experiences of changing refuge/prospect was the pattern of a connecting sequence from the exterior to the interior along a circuitous path (pattern 13).

To diagram the way Wright composed the public and private space, I color coded the different functional spaces, the cool colors of blues representing the most private spaces of bedrooms and bathrooms, the warmest colors of yellows representing the most public interior spaces of living and dining (figure 29). The kitchen is slightly more private and is represented in ochre, a slightly cooler shade of yellow. The circulation space connects the public and private and so is green, the color most balanced between the warm and cool ends of the spectrum. The miscellaneous rooms of library, playroom, guest room, and laundry or servants quarters are represented with a blue/green color. The terraces are fuchsia, the chimney red, and the area around the hearth is a brick orange color. Everything outside the walls is represented by gray. Finally, everything under roof was given a wash of burnt umber to show the overhanging eaves. Thus, these diagrams reveal the overlap and dynamic relationship created by different degrees of public and private spaces, as well as the relationship between prospect and refuge in the patterns identified by Hildebrand. (28) Hildebrand identifies thirteen patterns as

consistently used throughout Wright's oeuvre (figures 30-55). All of these patterns have aspects of differentiating and uniting the public/private spaces, and express a healthy relationship between self and world.

## **Chapter Two: Precedent Study**

### **Section 1: Frank Lloyd Wright's Organic Architecture in Light of Norberg-Schulz's Typology of Space**

Many people have wondered about the Oriental quality they see in my work. I suppose it is true that when we speak of organic architecture, we are speaking of something that is more Oriental than Western. The answer is: my work is, in that deeper philosophic sense, Oriental...The gospel of organic architecture still has more in sympathy and in common with Oriental thought than it has with any other thing the West has ever confessed (29).

I believe it is this "oriental quality" that I have called the both/and dynamic, or the balance between opposites, that is quality that makes the work of Frank Lloyd Wright of lasting significance. He articulated in buildings and in his writing a new sense of space values. He focused on space, but never simplified it to abstract concepts. Further, while his statements were often self-serving and many people characterized him as egotistical, most of his buildings he designed have been used and loved for a century. He has many critics, yet his work has served as inspiration for many individuals and for the architectural culture in general.

Wright was not anti-historic, but he was always interested in living form and living ideas. He said that it was an old yet new sense of reality that leads to organic architecture; what Wright also called natural building, or integral building. Wright developed a new aesthetic of continuity to achieve organic architecture by using any technique, including machine technology. "This ideal at work upon materials by nature of the process or tools used means a living architecture in a new age, organic architecture, the only architecture that can live and let live because it never can become a mere style...Where principle is put to work, not as a recipe or as formula, there will always be style and no need to bury it as 'a style.'" (30)

Wright was following Louis Sullivan, his "Lieber Meister" in the pursuit of an integral sense of the whole. Wright seemed to intuit the basic underlying unity that could be conceived architecturally. We can differentiate between form and function, structure and ornament, interior and exterior, etc, but

we can also unite the polarities once again, with mutually informing relationships between form and function, integrated ornamentation, and continuous space from the inside and outside.

In The Natural House, Wright described his ideal of plasticity as like the appearance of the surface of the hand contrasted to the skeleton. Wright uses many metaphors of living processes to explain his ideas; for example, that organic architecture comes “from the ground up into the light by gradual growth,” asking, “why any principle working in the part if not working in the whole?” (31) He always relates the part to the whole and vice versa. Thus, his methodology was very much like my own, neither purely inductive, nor purely deductive, but both/and; moving back and forth from working from the general to the specific and the specific to the general. To me this is the foundation of creativity, and an ideal that can inform the whole of one’s life as well as particular projects and problems in life.

In applying Norberg-Shulz’s theory to Wright’s work, I discovered that, in his writing, Wright touched on the entire range of spatial types that were discussed in the theoretic part of this thesis as the structure of space. For example, concerning the most concrete category of pragmatic space as a relationship between the private and public functions of the architectural program, Wright treated private space differently than public space, thereby differentiating them, but he also united them with spaces that were semi-public or semi-private. Wright consistently used an open floor plan, uniting the living space, dining area and to a less degree the kitchen. He handled these public spaces with few boundaries, leaving the occupants free to interact and create social and familial relationships. He handled the private spaces of bedrooms and bathrooms very differently, separating them first from the public space by putting them in a separate wing or down a corridor. Thus, Wright’s interiors did not consist only of boxes, with each domestic function in its own box. Wright’s buildings were sometimes criticized for not providing enough privacy, as when the noise of the children interfered with adult conversation. By preferring that his clients select large sites as far out in the country as they could afford, was Wright avoiding the need for clear boundaries to give the family privacy from the community? I do not believe Wright was ever criticized for providing too much privacy or too little public space. As the diagrams in chapter one showed, proportionally there was always more square footage and more openness for the public spaces, even in Wright’s compact Usonian houses. On the other hand, the bedrooms, even the master bedrooms, were boxes placed as unobtrusively as possible. The photos that record the best of Wright’s spaces are almost always the living, dining and sometimes reception areas, especially as connected to the large terraces that form another layer of overlap between public and private. These terraces were usually raised above street level and partially under the deep eaves, and so together these patterns provided a layering of public to private spatial zones.

Turning now to Wright’s use of perceptual space, the relationship between the part and the whole was of primary importance. The result of composing perceptual space to create dynamic balance between part and whole is what leads to craft, and the craft of Wright’s buildings is always apparent and admired. “Perfect correlation, integration, is life. It is the first principle of any growth that the thing grown be no mere aggregation. Integration as entity is first essential. And integration means that no part of anything is of any great value in itself except as it be integrate part of the harmonious whole.”

(32) Wright studied materials, for he thought that each different material required a different handling, and each different handling as well as the material itself, had new possibilities of use peculiar to the nature of each. It was this secret of simplicity that indicates we should regard nothing at all as simple in its self. Wright's was his exacting ideal: that all ornament should be wiped out, unless it, too, was an integral feature of the whole. True ornament became more desirable than ever but it had to 'mean something,' in other words *be* something organic in character. It is this organic character that is so apparent in the craft of Auldbrass, where every part is integral to the whole expression.

Wright was also a master of architectural space, as can be seen in the way he designed the relationship between the inside and the outside. This is the space that balanced, living form is created. For Wright, this came from various form researches, and led him to the principle of plasticity working as continuity. Observers sense the continuous space that unites the inside with the outside. Critics notice the plasticity and interconnectedness of the forms of Wright's buildings. Wright thought that space determines form from within. He strived for walls that were no longer the sides of a box. "It was enclosure of space affording protection against storm or heat only when needed. But it was also to bring the outside world into the house and let the inside of the house go outside." (33) Materials of the outside walls came inside and vice versa, establishing intimate harmony with the site. Glass was another means that the interior space concept (appropriate enclosure of interior space to be lived in) could be realized; so that open reaches of the ground could enter the building and the building's interior could reach out and associate with the vistas of the ground. Thus, the ground and building would become more and more directly related to each other.

Existential space is the relationship between self and world and leads to a sense of architecture as dwelling. Wright was a master of creating character, or spirit of the place, through a keen sense of dwelling. Wright had an idea that shelter should be the essential look of any dwelling, which is why he put the low spreading roof, flat or hipped or low gabled, with generously projecting eaves over the whole. "I began to see a building primarily not as a cave but as broad shelter in the open, related to vista; vista without and vista within" (34). He thought that providing the freedom of floor space and elimination of useless heights worked miracles in the new dwelling place; the whole became different, more fit for human habitation and more natural on its site. Wright believed that the relationship between humans and the environment was vital. He went so far as to say that nature is the great teacher, and man can only receive and respond to her teaching. "The house you build to live in as a home should be (so far as it is possible to make it so) integral in every sense. Integral to site, to purpose, and to you." (35)

Wright's work was always creative, for he was working between the real and the ideal to create architecture as art. The artistic space he created was new and came from his rich imagination. "Strange to say this required uncommon sustained concentration of uncommon imagination (we call it vision), demanded not only a new conscious approach to building but opened a new world of thought that would certainly tear down the old world completely." (36) Wright put to work the ideal of organic simplicity, which he thought would lead to historic consequences throughout the world. Integral

ornament comes from the human imagination, and gives a natural pattern to the structure itself by qualifying the surface and giving new significance; it is the developed sense of the building as a whole. This leads to a sense of beauty as the harmony of the parts in relationship to the whole, and demonstrates an interesting connection between artistic space and perceptual space, between art and craft. That is, the artist's imagination reaches into the ideal and then brings into perceptual reality the image of the integrated whole. To do this with real materials activates perceptual space and the concrete relationship between parts and wholes that leads to craft.

Wright also composed conceptual space, as when he says, "The man who designs the house must inevitably, speak a consistent thought-language in his design." (37) Wright is describing cognitive space, which leads to meaning when architecture is viewed as a language. For example, Wright believed that in architecture, expressive changes of surface, emphasis of line and especially textures of material or imaginative patterns make facts more eloquent, forms more significant, thereby creating a dynamic balance between concept and percept. Wright believed that the "old architecture," so far as its grammar went, disappeared. New architectural effects come to life owing simply to the working of the principle of plasticity. Wright used expressive forms as perceptual content to communicate architectural content that he grasped as a grammar. "Every house worth considering as a work of art must have a grammar of its own. 'Grammar,' in this sense, means the same thing in any construction- whether it be of words or of stone or wood. It is the shape-relationship between the various elements that enter into the constitution of the thing. The 'grammar' of the house is its manifest articulation of all its parts...Everything has a related articulation in relation to the whole and all belongs together; looks well together because all together are speaking the same language." (38)

The last type of space to discuss is abstract space, which looks at architecture as geometry and leads to structure. One example from Wright's writing is the idea that strength is the co-interrelation between the two elements of support and supported to reinforce each other as a whole under stress. As shown in the Usonian houses, geometry was always the underlying structure that created a dynamic balance between stillness and movement.

## **Section 2: Arts and Crafts Schools: Arrowmont, Penland, Haystack Mountain and Black Mountain College**

The precedent study for this thesis was originally Frank Lloyd Wright's Auldbrass Plantation, but during the design phase of the thesis, it was determined that better precedents would be the campus and architectural character of the existing Arrowmont school in Gatlingburg, two other arts and crafts schools in the southern Appalachian region, and one campus designed with extreme environmental sensitivity on an island in Maine.

Arrowmont currently sits on 14 acres within a larger 100 acre tract (figures 56). Two advantages of the existing site plan include an informal arrangement of buildings along the street with parking distributed widely and conveniently, and northern light for all the buildings. Two disadvantages are that

there is no common open space, nor is there any organizing structure to the connections, both pedestrian and vehicular, between buildings. This informal arrangement of buildings that have accrued over time is a quality that can be kept in a new design, but with more emphasis on community spaces, both interior and exterior, and clear circulation that connects studios, residential buildings, and community buildings.

Penland sits on top of a mountain with steep terrain similar to the Loghaven property (figure 57). Like Arrowmont, the buildings have been added over time, with no master plan until recently. I talked with Abie harris, the planner for the property about the advantages and disadvantages of Penland's campus layout. Penland is just over 100 years old, but their first plan was done in 1999 and updated in 2006, and identifies sites for future buildings, describes process of planning, and design guidelines.

For the Penland campus, the organizational concept of levels and terraces was important. The studios are laid out in a reverse S curve that links all the studios, places dining in the middle as the focal point and gathering place, with all buildings oriented to the south and the open meadow, which will never be built on, as it serves as focal point, social and performance space, as well as defining character of the place. It is an organic "higgly-piggly" arrangement where the intention is to preserve the reasonable disorder. General design guidelines include the uniqueness of the site, porches on all buildings, as well as courtyards and outdoor work areas to emphasize outdoors. No classes have been held in winter but they are considering opening up the use of the campus during these months. In terms of size of Penland's buildings, Lily Loom is the biggest with 18,000 square feet, Craft House has 11,000 square feet, Horner has 12,000 square feet, and Pines 15,000 square feet (dining room with living area above).

In terms of programming, the plan for Arrowmont will have the same five components that Penland has- residential for up to 200 persons at a time; gallery space; studios for ten different media for 18-25 students; dining and community space, both indoors and outdoors; administrative offices. What works best about the current dispersal of these functions for Penland is that the mixture is good and works well, although considerations were given for the placement of the Wood Studio and the Iron Studio in terms of the noise produced, which is why they are where they are. Future housing was going to be sited north of these two studios but that was changed because of the noise factor.

In terms of the administrative function for Penland, currently the offices are scattered in 12 different buildings, but there is in the plan an "All School Building" to gather the offices in one place. Concerning the residential component, there is a flexibility and mixture of different types of housing. Students want cheap dorm space. Older visitors want more upscale accommodations. Penland will be adding more of the later, as well as sleeping porches for students to camp out in. Concerning the gallery space, there is a planned addition for the present Gallery Space, but the upfront position is good as it acts as a gateway to the campus.

Concerning parking and circulation, a two minute walking radius defines the core for Penland's campus. There are 216 parking places at Penland, and parking has never been a problem, although

occasionally board members complain if they have to take the shuttle or the 8 minute walk from the parking at the entrance near the Gallery. Parking is a little bit everywhere, so studios are very accessible for delivery and handicapped parking. Trails, while not ADA, are gentle slopes. They tried offering bicycles, which didn't work, but the shuttles work well for the large open house and auction. There is a strong desire to improve the pedestrian pathways.

In terms of planning for the future, a determination was made that Penland has reached its optimal size, but there is room to grow within the existing campus. They are limited by their dining room size, and the goal is to keep classes full. There is an interest in long term leases for people to build on Penland lands.

Haystack Mountain School of Crafts served as a good example of ecologically sensitive site planning and building (figure 58). I explored the option of placing the buildings on stilts in a similar fashion, but determined that, while this made sense on a rocky island in the ocean, it would not save land or resources to build in this manner on the Loghaven property. Therefore, while using the same wedge shaped form for the studios, which all face north in my plan, I placed them in the ground, banking the earth to the rear of each building, while still providing maximum northern light for each studio. Thus, the natural simplicity of the architecture, as well as the orientation towards the natural setting, served as one of the major precedents for my design of Arrowmont at Loghaven.

Black Mountain College also served as architectural inspiration for my thesis (figure 59). In particular, the main building with its faceted lobby and pivoting wings became the *parti* for the buildings I focused on in the design of the dining facility and the community room/auditorium.

Thus, bringing the concepts of Frank Lloyd Wright's Organic Architecture together with the precedents of these four arts and crafts schools, I composed an articulated spatial dynamic for Arrowmont at Loghaven, documented in the conclusion of this thesis.

### **Chapter Three: Project Analysis of Site and Program- Balancing Conservation and Development**

The Loghaven property must have an ecologically sensitive plan, which will be investigated through mapping the resources, describing the topography, gathering available information and history, setting conservation and development goals together, and concluding with a proposal for enhancing the natural resources with some development of the property (figure 60- ). After looking at the assets and limitations of the site, I will turn to the needs of Arrowmont to develop some portion of land to accommodate the program of education through crafts and arts.

Loghaven was owned by the Southern Trunk Company, a logging company, until Martha Black Cross bought it in 1915, adding a second tract in 1923. Martha Cross built the log cabins that are still there and rented them out. The first tenants were TVA employees, but many other prominent (mostly men) lived there as well, including the insurance agent Stuart Worden, the News Sentinel columnist and



cartoonist Bert Vincent, and the legendary Chris Whittle, who went on to form Whittle Communication. The land was owned for a time by Phillip Moffitt, a partner of Chris Whittle in the venture of 13-30 magazine, and Moffitt still owns one of the cabins (figure 66). He sold the rest of the land to some developers from Atlanta in 2005. See Saw Construction planned to put condos on the tallest ridge, which also happened to be a Civil War site called Fort Higley (figures 67-70). Since the developers had to get the property rezoned to build condos, the issue became public and six different groups opposed the development plan. Knox Land and Water Conservancy, the group that I represented, was most interested in protecting the natural and historic resources (figures 71- 80), asking for at least half to be kept as protective open space by donating a conservation easement to our land trust. The Civil War Roundtable was interested in preserving the civil war site, and Knox Heritage joined out of concern for the archeological resources. Friends of Loghaven, led by David Haynes, MD Kirpatrick and Red Hickey were concerned about the intensity of development on the steep hillsides and the visual impact on the community. Cherokee Bluff Condo Association was also concerned about the view shed. South Knox Arts and Heritage, an organization that owns the Candora Marble Building down the street from Loghaven, the original show room and office building having been placed on the National Register of Historic Places, and has been working for years to revitalize the Vestal community. These groups joined together to ask City Council to place an H-1 Overlay (a zoning designation that requires more stringent approval reviews than normal zoning requires) on the property to protect Fort Higley. The Council decided to take the action off the table, neither voting it down nor up, and so the developers were left with a property that might be restricted in the future by council action. In this thesis, I will show that there is a way to preserve and protect the conservation values of Loghaven while still supporting some low impact, green development. It is a secluded retreat that would offer sanctuary for visitors. It has a very special Appalachian character, yet is a mile from downtown Knoxville.

Further, and key to understanding the mutual benefit of the dynamic between conservation and development (i.e. that they are not only not mutually exclusive, but that they need each other) is that conservation costs money, and so some development would provide the revenue for perpetual protection of the conservation values, natural resource enhancement, and physical maintenance of the historic buildings and property. Finally, not just the immediate neighbors, but the widest community possible can come to care about the conservation values of the land. Public access is the most direct way that people come to care about conservation land, through the visual participation of a beautiful landscape, recreational use of trails, appreciation of nature, and production of food. Retreat facilities that would bring in a wide variety of people to enjoy the low impact use of the land would serve the environment, the culture and the individual

A similar type of development occurred on another 100 acre property next door, called the Rose property, purchased by a developer from Athens TN. He started building condos first and had phase I complete, phase II under construction, and phase III on hold. The Rose property is visible from Neyland Drive, and so the possibility to purchase and protect at least phase III along the bluffs is still being pursued. The Aslan Foundation purchased Loghaven in 2008, with the intention to find an owner that would preserve the land.

A newspaper story ran in Oct. 2008 with the title “Little slice of wooded heaven seems to be saved.” MD Kirpatrick was quoted as saying, “They say they are just holding this place (to protect it from unwanted development), and we have no idea who is going to end up with it.” The need to protect the resources is paramount in any site plan for this property. The Civil War site will probably not be included in the land going to Arrowmont, to keep it with Fort Dickerson as part of the city’s public assets. The log cabins are mostly in good shape and have historic value, as well as adding character to the place. The site analysis maps these and other resources to see if there is a way to balance the conservation needs with some building and human use (figure 81). With appropriate low impact development, funds would be available to enhance the resources with creation of wetlands, sustainable forestry to improve habitat, and preservation of the historic structures (figure 82).

During the process of site planning, I looked at three areas for the campus for Arrowmont (figures 83-86). Alternative A redeveloped land already used for the Animal Shelter, and so would be the most environmental choice, but it was the least beautiful part of the site and very close to railroad tracks that carry many trains that blast their whistle all night long. Alternative B extended the existing cabins along Loghaven Road and so provided a scenic and integrated building plan, but it violated the historic context and therefore was not implementing one of the goals I had for this project, to preserve Historic Loghaven. Further, by being laid out along a ridge line, there was neither common open space nor room to grow except to spill down the slope. Alternative C provided a sheltered cove, thereby creating a retreat setting in nature, protected from the noise of trains and traffic. Further, this alternative was on the original house site and has a road bed down to a fairly level area that could serve to organize the buildings and outdoor community space. There is a second road bed leading out of the cove to Candora Road, and so a minimal grading would have to occur to get vehicles in and out of the campus. Therefore, alternative C was chosen and developed further with the programming needs in mind (figure 87).

Turning to the program analysis, the question is, would Loghaven be a good fit for Arrowmont? The function of the school has been to promote arts and crafts literacy on a national and international scale (figures 88 and 89). Arrowmont educates artists of all skill levels, and it continues to serve as pioneer in the field of arts and crafts literacy. The programming continually introduces new forms (baskets and turned bowls), new materials (polymer clay, precious metal clay), and new methods (digital everything).

Unlike the Pi Beta Phi Settlement School that founded it, Arrowmont School of Arts and Crafts has not been Gatlinburg-centric. The news that the Pi Beta Phi Fraternity was considering selling the property has brought offers for new homes from several East Tennessee communities. Although moving the facilities would be a major undertaking, the Board of Governors is considering its options. The initial program analysis consists of a survey of existing buildings and square footage accommodations, and served as the basis for my thesis project.

Although the development of the site plan and one building or group of buildings would be the

content of my thesis project, it was my intention to start with a conservation plan first, and work to create the balance needed to preserve the property's natural and cultural resources. In creating the Development Plan, I identified the sixteen-acre former Animal Shelter (property that the Human Society would like to sell to create an endowment) as an important addition to the proposal, as this parcel is a natural continuation of the southern hillside. The integrated conservation/development plan provides for long term protection of the natural and cultural resources, while providing a new home for Arrowmont at Loghaven (figures 90 and 91).

I began my investigation with the idea that the development could be accomplished in modules over time, overlapping with the existing Arrowmont in Gatlinburg as a satellite facility. Phase II is eleven acres, and Phase III is 3 acres. I identified two areas of about a half an acre each near the entrance of Loghaven Road, each is about 125' by 200' and almost touch along their diagonals as Loghaven Roads comes off of Candora Road. This area could be made into a beautiful and expressive entrance, with a beautiful view down to the cabins on Loghaven. The old road bed to the left could be the main entrance to the main campus in Cherokee Cove, and so would keep traffic to a minimum along this narrow road.

In the initial stages of investigation, I proposed the circulation system of roads, sidewalks, paths and green streets as identified on the plan and included in the areas identified as Phase I, II, and III, or forming the boundaries of the crown of the hill with the cabins. This layout thus uses roads and pedestrian pathways to both differentiate the different components of the overall plan, and at the same time unifies the parts into one overarching whole. The footpaths that go through the natural areas are mulched. The green street is concrete pavers with grass growing in the voids. The parking is constructed similarly, located just off the paved streets, using a system of structural cells to hold the soil and grass.

The Conservation Plan identifies four types of values that need to be protected and I have included proposals about long term stewardship of these areas. Fort Higley (approximately eight acres) should be broken out and placed under the stewardship of the same groups that are over Fort Dickerson and hopefully Fort Stanly (Civil War Roundtable, Legacy Parks Foundation, the Knoxville City, and a new group forming to develop the heritage tourism potential). The historic structures on the property should be placed under an H-1 overlay with the City of Knoxville, and attempts should be made to renovate these structures and place them on the National Register of Historic Places. The log cabin owned by Phillip Moffitt should be included in these protection measures if he so desires. Further, it is recommended that the Aslan Foundation pursue an option or right-of-first-refusal on Moffitt's property, as it is the only island of private property in an otherwise unified project area. The ownership of this 5 acres along Loghaven Road, which I am calling Historic Loghaven, could remain with the Aslan Foundation, be donated with the other land to Arrowmont or another not-for-profit partner, or transferred to another entity that has a focused mission of preservation of heritage and cultural assets, such as Knox Heritage or Friends of Loghaven, a community group that could incorporate to carry this portion of the project forward. The advantage of an for-profit version of Friends of Loghaven taking on the historic structures is that tax credits would then be available. To raise funds for the renovation and upkeep of the historic structures, an outdoor theater could be built along the north side of Loghaven

Road, terraced and sloping down to an arts and crafts type band shell. This is identified on the plan as an egg-shaped area of approximately 100' by 300'. This venue could support mountain music and Appalachian storytellers that would be a source of income, an outreach to the wider community, and an evening entertainment for visitors to Arrowmont and the retreat facilities located within a short walking distance. The property at 1005 Loghaven Road should be purchased when possible to become the restroom and chair rental for the outdoor theater. The Speakeasy could become the offices for the managing entity for Historic Loghaven. All parking could be shared with the retreat facilities so that no additional parking would have to be built in the five acre area along Loghaven Road.

To preserve the natural resources of water and trees, either a conservation easement or deed restrictions should be placed on the remaining land. It would be important to restrict future development, but to keep the land available for trails, sustainable forestry, conservation burials, decentralized wastewater treatment, wetlands creation, gardening and farming. The stewardship of this property (approximately seventy-two acres) could be divided between various partners, for once the conservation values are properly protected with an easement or restrictions, the environmental health and integrity of these acres will be insured. On the plan I have designated a water resource protection zone of 5 acres that is spring fed and has the potential for wetlands creation. A managing entity that can create wetlands could also sell wetland credits, which are usually in the neighborhood of \$50,000 per acre. Further, the wetlands would be an asset for the habitat and environmental diversity of the land.

Adjacent to this area, I have identified a strip of land approximately 100' by 2000,' or nine acres, for a possible decentralized wastewater treatment dispersal zone. This figure is based on the estimate of maximum water usage of 30,000 gallons per day of all facilities, while maintaining or improving tree cover in this area. Keeping the trees would double the amount of land needed for dispersal, and species that don't mind getting their feet wet would need to supplement the existing plantings to ensure healthy tree coverage into the future. The treatment part of this system could be integrated into the pedestrian bridge structure proposed for the mouth of Cherokee Cove to unite the north and south hillsides, which would also give visitors an experience of overview into the wetlands and up the cove.

I have identified an area of approximately twenty acres that would be enhanced specifically for wildlife and recreational values, with a natural surface trail and native plantings to attract birds and provide aesthetic enjoyment. This area is located generally between the 910' and 960' topological lines. It could incorporate conservation burial sites, a new type of "green burial" that provides revenue while further protecting the land, as the only law that functions to keep land from being developed concerns human burials. Further, the aesthetics of this type of burial fits into the natural setting, with simple markers flush with the ground, and seating areas set aside for quiet contemplation. There is another natural area identified on the plan as "wilderness" and includes approximately twenty-five acres along the north side of the property adjacent to Fort Higley. This area should have a sustainable forestry plan created to improve habitat, but would otherwise be left alone with just one trail connector up to Fort Higley.

A six to seven acre area along the eastern side of the Human Society land has been identified for agricultural use, mostly for milk goats and gardens that would have to be developed with compost from the dining and farming facilities over time, as the soil is currently fairly poor. Goats are an excellent way to deal with the exotic invasive species that Loghaven suffers from, like many areas of East Tennessee. Goats are browsers not grazers (more like deer than sheep and cows, who eat grass), and so thrive on bush honeysuckle, privet and kudzu. A simple perimeter electric fence and some herd dogs could be used to manage the goats, and they do not mind the steep hillsides. Lastly, 7 acres to the extreme southern edge of Loghaven and the Animal Shelter are being set aside for future development. The few parcels that lie between the railroad and these lands should be pursued for purchase, and plans made for a public park or plaza. The entrance road could be realigned for better use of this land, and if passenger rail is allowed in the future, a small station could be built.

#### **Chapter 4: Design Implications for Arrowmont at Loghaven**

*Architecture re-presents the essential strife between spirit and matter, mirroring the essential strife within the human being as the animal rationale... Architecture is needed to recall the human being to the whole self: to the animal and to the ration, to nature and spirit. (43)*

I will briefly outline some of the implications for composing with different kinds of space, ideas that I am taking away from the exploration of the structure of space to be applied to the design of Arrowmont at Loghaven. I will go in reverse order, and look at the most abstract way of thinking about architecture first, Architecture as Geometry.

As a metaphysical space, abstract space relies upon pure geometry. We might be interested in this kind of space because it concerns the ultimate foundations of existence, and so we might want to work with ideas about autonomous existence to ground the work on a philosophic foundation. As applied to Arrowmont at Loghaven, composing the abstract space first led me to a central geometric ideas that could inform the design. I explored the use the hexagonal grid from some of the Usonian Houses, which is also the geometry of the bee hive. However, after feedback from my committee, this planning unit was abandoned, and a rectilinear system was employed. The six sided figure returned at the stage of design when a central lobby was included to join the auditorium and the dining hall, which served as a pivot form to keep the buildings in line with the undulating hillside.

We concern ourselves with architecture as language whenever we work with architectural concepts that lead us to meaning. Here, metaphors can inform the design, for example, the vertical direction represents a rising-up or falling-down, and has since remote times been considered the sacred dimension of space. "A work of architecture, as a whole and in its parts, acts as a symbolic statement, which conveys, through our senses, humanly relevant qualities and situations." (44) Symbolically, organic architecture brings many integrative concepts connected to growth, life, unfolding capacities and development that would fit well with the mission of Arrowmont of "Enriching Lives through Art." The final metaphor that was used in the design was a farmstead which grew artists rather than crops.

Architecture as art is concerned with expression and finds its outlet in creativity. Arrowmont at Loghaven is therefore mainly concerned with the creation of an ongoing story centered on education in its founding, and the arts and crafts as it has unfolded over time. The arts and crafts of Arrowmont can serve the creation of the new campus in four ways. First, creativity has been and can continue to be celebrated. Donations of art works to sell and support a satellite campus can be organized, as well as financial support of purchases of pieces for a permanent collection that stays on display, connecting financial and creative support in a mutually beneficial way. Second, artists and craftspeople can participate in the creation of the campus. Third, a new program can be planned for the future, for classes that design prototypes for small scale manufacturing of limited edition architectural elements, coordinating with efforts like this already underway across the Appalachian Mountain at Handmade in America. Finally, the sales gallery and permanent collection will be an ongoing way to showcase the craft and art of Arrowmont. Future plans could include a sculpture garden as part of the more public areas of Arrowmont at Loghaven.

Lessons learned about composing existential space concerning architecture as dwelling indicates there is a strong ethical component. Individual artists and craftspeople sometimes have clear vision and imagination for the possibilities in a new venture. For the board of Arrowmont and the consultants, it will be equally important to work together as a group as it is to be open to individual inspiration. Becoming clear about individual values and character traits can create conflict. Institutions do not always survive major changes. However, if we approach the creation of the dwellings, either for living, working or playing, by being interested in each other and the world, then there is a basis for beginning a dialog that is not about competition or conflict, either/or outcomes. Architecture as dwelling, then, is concerned with the character of the world, the character of individuals as separate and unique selves, and how they interact and relate. Cultivating relationships is key to composing dynamic balance in existential space.

Architecture as design is concerned with the themes of the project and will result in representations of these themes in concrete ways. Therefore, part of the designer's work is to reveal the themes for the client and the community, demonstrating the dynamic tensions that have informed the thought process as well as the final design proposal. For example, Arrowmont in its present location has been considered an "oasis" in downtown Gatlinburg. The entrance is just a few feet from the main street, and yet it feels like entering another world when you pass through the entrance. Is this a theme that Arrowmont would want to recreate and how might this be done? How Appalachian does Arrowmont feel itself to be? What is the ratio of traditional crafts to modern work? What is the community life like and how might this change in the future? What is the ratio of use of the facilities for classes verses retreats, weddings, and other types of meetings?

Architecture as building is concerned with the form of the project and the result will be the crafting of the materials and processes to compose a dynamic balance between the parts and the wholes. Practically, this means starting to research available products and ways to create new products that are not available. The balance of opposites could be worked with at this level by combining some

prefabrication and mass produced elements with hand crafted and unique elements. Technology and the arts will need to find ways to interact and cross fertilize to create an integrated project. It would be the client's determination whether to go for LEED certification, but the design and planning could lay the groundwork for this to happen. The economics of the project are part of the context that comes into play, and should be informing the composition as well. These are just some of the many considerations that I am carrying forward towards the design process, and eventual construction of Arrowmont at Loghaven.

Lastly, architecture as program was introduced in chapter three. Generally we can say that the major concern is how Arrowmont would function if brought to Loghaven. Focusing on architecture as program, the design itself will be a proposal about how the public and private spaces can be balanced. My conclusion is that the program of Arrowmont would fit well at Loghaven for three reasons. First, the land has an Appalachian character that could be kept in perpetuity with a conservation easement or deed restrictions for 80% of the land. Second, it is close to a population center and UT is the arts educational center for East Tennessee. Lastly, it is easily accessible from both I40 and I75, less than a mile from downtown Knoxville, and two turns off Alcoa Highway from the airport. Further, the site analysis identified what areas would be appropriate for development of a campus. Balancing the programming needs with the intention to conserve the resources will be the primary driver for my thesis project.

## **Conclusion**

Working within the theoretical framework I set up for myself in this thesis was both challenging and frustrating. I was constantly moving back and forth from the intellectual content, the aesthetic content and the practical content of the project. In addition to that complexity, I found myself struggling with another kind of content altogether, that of the power dynamic of the university and architectural education. Those issues almost derailed the thesis process, and would have without the assistance of Bill Rudd, who stepped into the fray and helped me sort out the issues to get me focused on the completion of the thesis project. I did not write the thesis I originally set out to write, nor did I design the project I had hoped to design. However, I learned much in the process, and ended up with a very nice project that may be helpful to Arrowmont should they decide to accept the offer from the Aslan Foundation of the donation of Loghaven. I learned about myself as well, my limitations as well as my aspirations to influence the built world in a very particular way. So while my original intention was not realized, I came to understand the importance of not force fitting a design idea onto a project. The idea still lives in me to create Honeycomb Construction, based on the full range of interests I have developed in my art work, in architecture school, and over my life's experience of imagining new kinds of spaces and building processes. I will not be pursuing the profession of architecture, but I will always value the education I received.

The final thesis project is illustrated with plans, sections, axonometric renderings, photographs of models and perspectives (figures 92-115). The result is a design proposal for a new campus of Arrowmont at Loghaven, serving as an arts and crafts school, and as a unique retreat with an Appalachian feeling in downtown Knoxville, TN.



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## Appendices

## Appendix 1: Endnotes

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## **Appendix 2: Figures (Attachments in pdf)**

## Vita

Karen Bailey was born on July 25, 1959 in Oak Ridge, TN. She attended Oak Ridge public schools from kindergarten through high school, graduating in 1977. Karen attended the University of Tennessee until 1985, earning three degrees, consecutively and sometimes overlapping, earning a BA in Philosophy, a BFA in Communication Design, and a MA in Philosophy with a minor in Art History. Karen has two children, Jenna Elizabeth Nolt, born in 1985, and Benjamin Eric Nolt, born in 1991. She started a preschool called The Schoolhouse, in the renovated school building that she and her husband, John Eric Nolt, owned at the time, which ran from 1989 until 2000, when she enrolled in the graduate program in the College of Architecture and Design at the University of Tennessee. Karen completed two years of the program and spent a semester interning with Knox County Parks and Recreation, where she applied for, and began work as the Greenway and Park Coordinator for Knox County. After six years in this job, she reentered the graduate program in Jan. of 2008, and will complete the Masters in Architecture in the summer of 2009. Karen will be returning to preschool teaching in August of 2009, at River Song Waldorf School in Fort Collins, Colorado.